

## REMARKS/ARGUMENTS

### *Status of the Application*

In the Final Office Action mailed December 5, 2007, claims 2, 5-17, 19, 33, and 34 were rejected. In the present response, claim 2 was amended to incorporate the subject matter of claims 5 and 15 therein. Claim 9 was amended to correlate the scope of the claim with that of amended claim 2. Claims 16 and 17 were amended to correct claim dependencies. Applicants believe that no new matter was added through these amendments.

Claims 5, 14, and 15 were canceled without disclaimer of the subject matter therein. Applicants reserve the right to file divisional, continuation, or continuation-in-part applications directed to the subject matter of these claims.

Thus, claims 2, 6-13, 16, 17, 19, 33, and 34 are pending.

### *Rejections Under 35 U.S.C. § 103*

Claims 2, 5-17, and 19 were rejected under 35 U.S.C. § 103(a) as being obvious over Templeton *et al.*, Langmuir 15:66-76 (1999), in view of Foos *et al.*, Chem. Mater. 14:2401-08 (2002). Applicants respectfully traverse these rejections.

Applicants have amended the subject matter of claim 15 into claim 2. The Examiner admits on pages 5-6 of the December 5, 2007, Final Office Action that the priority application to the present application supports the subject matter of claim 15.<sup>1</sup> Thus, Foos *et al.* should not be considered a statutory bar for amended claim 2, allowing Applicants to swear behind this reference.

Regarding the Examiner's concerns about the 131 Declarations submitted with the September 27, 2007, Response to Office Action, Applicants provide the following comments. In first paragraph of the Examiner's "Response to Arguments", the Examiner focuses on the final concentration of water in the reaction mixture. Claim 1, however, is not limited by the final concentration of water in the reaction

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<sup>1</sup>Applicants have amended the present application to limit the shielding component to short chain ethylene glycol oligomers in the interest of furthering prosecution. Applicants still disagree, however, with the Examiner's position that the provisional application does not disclose a shielding component outside of ethylene glycol. At page 7, lines 20-30, of the provisional application, Applicants describe a shielding component in the same way as it is disclosed in the present application. Possible shielding components noted in the provisional application are "short chain ethylene glycol oligomers, ethylene glycol methacrylate, sugars, crown ethers, and acrylamide, where the short chain ethylene glycol oligomers are preferred" (page 7, lines 28-30).

mixture. As noted at page 13, lines 31-32, of the specification, “it is preferred if the final concentration of water in the mixture is from about 9% to about 18% V/V.” (emphasis added). During prosecution, “it is important [for the examiner] not to import into a claim limitations that are not part of the claim. For example, a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.” MPEP § 2111.01(II) (quoting *Superguide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875, 69 USPQ2d 1865, 1868 (Fed. Cir. 2004)). As claim 1 does not include the limitation “wherein the final concentration of water in the reaction mixture is from about 9% to about 18% V/V”, the Examiner should not be reading this limitation into the claim, and Applicants should not have to demonstrate reduction to practice thereof.

Regarding the second paragraph of the “Response to Arguments”, the Examiner asserted that Applicants failed to provide evidence that the claimed process would work with metals other than gold. December 5, 2007, Final Office Action at pg. 5, 1<sup>st</sup> ¶. The Examiner further asserted that “[t]here is no indication that all metal salts, all shielding components, all capture components, all reducing agents, all water miscible solvents, and all aqueous solvents . . . would be operable in the claimed method.” *Id.* Finally, the Examiner asserted that Applicants did not provide sufficient evidence that the claimed invention would work outside of a pH range of 2.0 to 5.0. *Id.*

Regarding to metal and metal salts, there are ample literature reports and sound scientific understanding that the Au-thiol chemistry Applicants have employed in their invention is extendable to Ag, Pt, Pd, Cu, and their alloys. See, e.g., Templeton *et al.* (Acc. Chem. Res. 2000, 33, 27-36, particularly page 27; attached herewith). Accordingly, Applicants have amended claim 2 to cover gold, silver, platinum, palladium, and copper metallic nanoparticles, and metallic nanoparticles alloys composed of those metals. Regarding to capture components, again there are ample literature reports and sound scientific understanding that the Au-thiol chemistry Applicants have employed in their invention is extendable to other molecules that have thiol functional group. Regarding to reducing agents, the three compounds Applicants covered in Claim 13 are common reagents used for Au-thiol chemistry. Regarding the solvents, those solvents Applicants covered in Claim 11

are common reagents used for Au-thiol chemistry. Even though Applicants have not shown each and every one of these combinations in their process, there is enough scientific basis for Applicants to expect them to work. Regarding to pH, what Applicants have shown in the Exhibits is that acidic pH works for their process. Even though Applicants have not shown other pHs, for someone with basic chemical knowledge, it is a logical expectation for Applicants' process to work for pHs less than 7.

In any event, Applicants are antedating only Foos *et al.*, and as such only have to demonstrate that Applicants reduced to practice what is disclosed in Foos et al. “Where the only pertinent disclosure in the reference or activity is a single species of the claimed genus, the applicant can overcome the rejection directly under 37 CFR 1.131 by showing prior possession of the species disclosed in the reference or activity.” MPEP § 715.03(I)(B). Here, the Examiner alleges that Foos *et al.* discloses “that an ethylene glycol oligomer (i.e., a shielding component) can be used in the preparation of a gold nanoparticle (abstract) to increase water solubility (pg. 2401 column 1 – pg. 2402 column 1).” December 5, 2007, Final Office Action at pg. 2, 6<sup>th</sup> ¶. The Examiner further alleges that the specific ethylene glycol disclosed in Foos *et al.* is tetraethylene glycol thiol. *Id.* at pg. 3, 9<sup>th</sup> ¶. To swear behind this reference, Applicants should thus only have to prove possession of the process of preparing a gold nanoparticle using a tetraethylene glycol thiol shielding component. The 131 Declarations and Exhibits submitted with the September 27, 2007, Response to Office Action do just that. For example, in Exhibit 4H, synthetic details of gold particles protected by tetraethylene glycol were shown. In particular, molecular structure of tetraethylene glycol was drawn. In Exhibit 5H, TEM images were shown for gold-tetraethylene glycol particles.

In light of the present amendments to claims and the discussion above, Applicants respectfully submit that the 131 Declarations submitted with the September 27, 2007, Response to Office Action are sufficient to antedate Foos *et al.* Removal of the obviousness rejections is thus respectfully requested.

**SUMMARY**

In view of the foregoing remarks, Applicants submit that this application is in condition for allowance. In order to expedite disposition of this case, the Examiner is invited to contact either of Applicants' representatives at the telephone numbers listed below to resolve any remaining issues. Should there be a fee due which is not accounted for, please charge such fee to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

Respectfully submitted,

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